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ABSTRACT

In the United States, support of science is heavily dependent upon the human element of effective advocacy. Such advocacy is the linking factor between universities, agencies, foundations, and the government. Governments customarily set the overarching tone for scientific activities and for ground rules guiding advocacy for science. In this country, a partnership exists between universities, the government, and agencies, and these institutions are linked by individuals who disseminate and transmit the ideas, proposals, and advocacies that shape programs ultimately established. Individuals chosen to advocate particular research programs must possess and display political sophistication, a knowledge of the value systems under which agencies must operate, and a realistic understanding of the limitations of budget, cycles of time, and other sources of pressure. Universities become part of the partnership because they supply the base resources for science. Unlike the federal agencies, they have not been intrinsically drawn to particular problem areas by their own mandates. In the universities, advocates for the sciences concerned with children, child behavior, and child development will have special responsibilities when they are confronted by pressures for applied research to meet social and economic needs. Such pressures will increase in the future.(RH)

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The Human Element in Science
Advocacy, Research Support
Mechanisms and Science
Administration

The Multiple Partnership: Scientist, University, Agency and Government

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Science is a way of looking at the world. It is an expression of humankind's curiosity, it involves the process of discovery, it produces knowledge for its own sake and knowledge for application to the human good. At its base, science is a way of asking questions and determining answers. It is an arena of human endeavor that in modern times, in contrast to the private patron system of other eras, is deeply embedded in the social and bureaucratic systems of the 20th century. It is these bureaucratic and social systems which bear analysis if one is going to look at the human element in science advocacy, research support mechanisms and science administration.

I have chosen as my focus what I call the multiple partnership--scientist, university, agency and government--and will start with the last of these in a most general way. Governments set the overarching tone for doing science and for laying the groundrules to advocate for science. There are many different kinds of governments on this planet--some are sovereign ruled, some are dictator/military led, some are socialist/collectivist, some

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are representative democracies. It is probably safe to say that the more monolithic the governmental system, the more centrally controlled the science. Under such circumstances advocacy then becomes a matter of access to the centrally controlling forces and a matter of being sufficiently in favor and/or in tune with the prevailing pressures on that society. In the People's Republic of China the choice of the research problem is determined by the head of the scientific institute of which one is a member; the choice of the problem must be linked to an identified national need. Studying the behavior and development of only children is a high priority at the present time, and individual advocacy for other problems, once the centrally determined priority for the only child issue was determined, would be unlikely to be effective. The human element in this and other similar systems is clearly subordinated to the political system though the political system itself is obviously the collective result of human influence.

Representative democracies are no less subject to political forces impacting on science. Only, the routes by which this occurs are perhaps more circuitous, more complex and more varied--to be described, I expect, somewhat vividly by some of the other participants in this symposium. It is probably safe to say that the more democratic the governmental system, the more likely it is that science will be heavily decentralized even if there is a tendency for political pressures to force particular emphases. Witness the edict to do research on smoking behavior during Joe Califano's tenure as Secretary of Health, Education and Welfare. Or, the large investment of resources on the topic of mental retardation as a result of the personal sympathies of a strong political leader. Or, public pressure on the political system to solve a public health problem such as AIDS.

The United States provides the premier example of decentralization and the complex enmeshment of science in the mechanisms of a representative democracy. It involves a system, if one may call it that, which at times resembles organized chaos. This is both its strength and its weakness. Strength because multiple options for advocacy open it up to innovation, individual initiative and the fortuitous results of the right person being in the right place at the right time. The weakness of the system is that it is subject to dissipation of effort, to submitting to ill-thought-out pressures to pursue particular problems as a result of political influences. There is, also, on the debit side, a lack of receptivity to long-term programmatic policy orientations. On the other hand, having established long-term programmatic policy orientations there is a danger of reduced responsivity to new information because the system can get too locked into the older knowledge base that spawned the programmatic orientations.

In contrast to some other democracies that have concentrated more of their research resources in special institutes, in the United States a large and significant percentage of scientific effort is carried out in universities even while much of this effort is financed federally from the central resources of the federal tax dollar. The heavy investment of federal dollars in both private and public universities for student aid and for research has led some to suggest that we ought to designate most of our major research universities as "federally assisted" universities--this in the absence of a strong national university system typical of so many other countries. Our university systems and our funding patterns contribute to the decentralized character of science in the United States.

This is where the partnership element comes in--a partnership strung together institutionally--university, government and agency--but the connecting links are provided by the individuals who people these

institutions and who carry to and fro the ideas, the proposals and the advocacies that push and shape the programs that ultimately become established. These human and political realities make for both the richness and diversity of American science. But, they also make for activities and programs that are not always so positively enhancing to the progress of science.

Here we are, today, at the biennial meetings of the Society for Research in Child Development--a Society dedicated, in part, to fostering the scientific understanding of how children grow and develop. While some favor the possibility of changing SRCD to SRHD, replacing "child" with "human," let us, for the moment concentrate on the topic of child development. In this multiple partnership we have multiple sources of funding--the universities themselves (state or privately supported), the federal agencies (sometimes, though much more rarely, state agencies), and private foundations. The federal element is decentralized into numerous funding agencies--many of which support the research of the members of this Society. Those funding agencies are influenced, as I am sure we shall hear, by political factors, by congressional pressure, by citizen constituent groups--and by the advocacy of societies such as ours. For example, it is well known that this Society has had a strong interest in influencing NICHD to hew to its mandate of supporting research that illuminates the processes of <u>normal</u> child development. The reason SRCD has had to exert such pressure is to counter the equally or perhaps stronger pressures of influence that advocate allocating research support for disease and disorder oriented research programs rather than seemingly plain old normal development.

How has SRCD done this? The Society gathers data; it calls upon its individual members to meet with and lobby on behalf of the normal child development programmatic mandate. Here is where the very human element enters. The individuals called upon to represent the cause are chosen carefully to represent geographic dispersion and the potential congressional back-up influence, to represent respectable, quality science with the inherent influence that excellence always contributes, to represent connections to the constituencies that can bring to bear their own pressures on NICHD--psychology, pediatrics, child psychiatry, etc.

But the effort to exert these influences will and do only succeed when they are tied to the realities of the pressures on the agency. Hence, the individuals must possess and display political sophistication, a knowledge of the value systems under which the agency must operate and a realistic understanding of the limitations of budget, of cycles of time, of other sources of pressure. In other words, the human element in advocacy must, in multiple ways, reflect the totality of the realities that contribute to decision-making.

Most of these individuals are, as has been noted, based in university settings. The universities are no less a part of this multiple partnership and are, similarly, influenced by the human element. Universities, like federal agencies these days, have multiple constituencies--including undergraduate students who seek a quality education and whose understanding and/or sympathy for resources to be allocated to research instead of undergraduate instruction are not always of the strongest. Universities become part of this partnership because they must supply the base resources for science--the laboratories, the technicians, the equipment, the space, and the climate and time for research. Unlike the federal agencies, they have not been intrinsically drawn to problem areas by their own mandates.

This is, however, changing--especially in some academic fields--with the importance of local economic development. Universities have been discovered as critical elements in economic viability--state by state, area by area. They are beginning to feel the kinds of pressures, typically reserved for federal agencies, to engage in particular kinds of research for the particular benefit to the state or the region. This is especially true in applied areas such as engineering and business; it has been less true in human behavioral science. However, as the concerns with productivity, competitiveness and economic survival grow more profound, the human factors will become paramount--outdistancing the importance of a new widget, a new gene cloning technique or even super-conductors.

Putting aside the most recent economic development influences, universities are part of the partnership because they set the stage for research capabilities in this nation by how well they maintain the infrastructure to support research, by their willingness to deed time to do research and to be committed to graduate education and by their concern to retain on a campus a sufficient critical mass of talent in given areas to permit high quality research activities to gain a momentum of their own; to become an intellectual and scientific community that partially feeds itself--and, ultimately, that becomes competitive for those private or federal support dollars.

The human element of advocacy is perhaps practiced to the height of its art on the university campus--whether it be in the person of a strong, charismatic chairperson or scientific leader, a dean or vice chancellor--or, on occasion, a president or a chancellor who has a particular interest in a particular academic area. The history of any university will validate these observations. The advocacy effort can be lodged in a group or unit.

Chemistry departments are notorious on many university campuses for their historically effective roles as advocates for chemistry and the natural sciences. Accrediting bodies can serve similar functions for some disciplines. For example, the prevalence of new law school buildings and of very strong law library programs can be attributed to the threat element of the accreditation standards for law schools. The less dependent a field is upon an external crediting body the more likely it is to have to advocate harder within the university for its resource base--unless there are special human advocate factors otherwise at work on that campus. These include the strong leaders, the existing presence of a critical mass of quality investigators, and, often, an extensive track record of strong external funding.

Having said all of this one might ask--Is it good? Is it bad? Would we trade it for a different system? Ideally, one might say, why shouldn't facts, knowledge and the necessary needs to build a body of knowledge suffice to guide the decisions to support science, whether it be on the university campus, in the federal agency, in the private foundation, in the halls of Congress--even in the state legislatures? Why should not individual curiosity and wherever it may lead be the strongest rationale for supporting science, on the assumption that eventually knowledge will be discovered which ultimately can be applied to problems, and to the human good?

Well, first, such an ideal has never existed. In the days of private patrons, science was no less buffeted by the winds of prevailing human advocacy. Second, no one has an exclusive corner on knowing what it is that it is right to do. Science will most likely be enhanced by multiple sources of influence and these multiple partnerships. What we lose because effective advocates may take us down what ultimately turn out to be blind

alleys, we may gain from having many advocates have their chance at influencing the process. A greater number of advances may be made possible because of the sheer number who have a go at it and succeed.

On the other hand, resources are always limited. One needs to look carefully at the balance of the portfolio so that it is always made up of some portion of resources devoted to the things for which there is the most effective and insistent advocacy and to those things for which the popularity of the moment does not exist. Here is where there is a particular role for selective human advocacy--for the unpopular, for the out-of-fashion, for keeping core capabilities in reserve for when they will be needed, for supporting the off-beat idea and, even more, for the off-beat individual who is not marching to the leading drummers.

This is especially true for the sciences concerned with children, child behavior and child development. And it is becoming more so. With the graying of the population the advocacy for children will weaken. Further, as social problems wax and wane in intensity, there is the danger that advocacy will focus, increasingly, upon particular problems. Problem-oriented advocacy has always been an issue, for it tends to take the crisis of the moment and demand research for solutions to the crisis without sufficient recognition that basic research, for its own sake, may, in the long run be the most efficient strategy in order to ultimately have the knowledge that permits productive research on the solution to the practical problem.

Today the pressures to do problem-oriented research are growing more intense and more subtle. This is understandable. The resources are, relatively, more limited. The social fabric of our society is delicate at best. The number of children being reared in poverty, the threat of an

increasingly bimodal distribution of wealth in this country, the potential for unrest born of these problems, aided and abetted by drugs and fragile family structures, the unresponsiveness of social institutions to the changing realities of the social networks that surround and support children...everyone can contribute to this list. Yet, the knowledge base regarding human behavior and the factors that contribute to the equations that determine developmental outcome are less solid than is true for other sciences that also face the increasing pressures for applied research to meet social and economic needs. We are still, in many ways, a pre-paradigmatic science. Unless we have good and effective human advocates for basic, non-problem oriented research, our applied work will never be able to have the solution impacts we want and expect. Balancing our advocacy is a responsibility we bear.

In sum, the support of science is heavily dependent upon the human element of effective advocacy--such advocacy is the linking factor between universities, agencies, foundations and the government. We will not change it by any amount of analysis but we can influence how it will ultimately affect the support of science by the standards we hold for selecting the advocates to whom we listen and by making sure that effective advocacy and public popularity do not ever become entirely synonymous.